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Incarcerated De Garengeot Hernia: An Atypical Presentation of an Abdominal Emergency: A Case Report

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Abstract

De Garengeot hernia is an uncommon form of femoral hernia in which the vermiform appendix is located within the hernia sac. Because its clinical presentation is usually nonspecific, the diagnosis is often difficult before surgery. An 87-year-old woman was evaluated for a painful right groin mass that had been present for one month and had worsened during the preceding two days. Ultrasonography suggested incarcerated hernia contents, and contrast-enhanced abdominopelvic computed tomography identified the distal appendix within the right femoral canal. Emergency surgery was performed through an anterior open approach. An incarcerated femoral hernia containing the appendix and hemorrhagic fluid was found, with ischemic-appearing changes in the distal third of the appendix. Appendectomy and tissue-based femoral hernia repair using the McVay technique were performed without mesh because of the potentially contaminated operative field. Histopathology showed recent transmural hemorrhage without acute appendicitis, supporting incarceration-related vascular compromise rather than primary inflammatory appendicitis. The patient had an uncomplicated postoperative course and was discharged 24 hours after surgery. This case emphasizes the value of preoperative imaging in selected patients and supports tailoring surgical management according to intraoperative findings.

Keywords: femoral hernia, de Garengeot hernia, appendix, appendectomy, McVay repair

Introduction

Femoral hernias are uncommon compared with other abdominal wall hernias, but they are clinically important because they have a greater tendency toward incarceration or strangulation. This behavior is explained in part by the anatomy of the femoral canal, a narrow space bounded by rigid structures such as the inguinal ligament, lacunar ligament, and femoral vein. Reported incarceration rates range from 14% to 56%, making prompt diagnosis and surgical treatment important in suspected cases [1, 2].

De Garengeot hernia refers to the presence of the vermiform appendix within a femoral hernia sac. It was first described in 1731 by René Jacques Croissant de Garengeot. Although femoral hernias account for approximately 3% of all hernias and are more frequent in women, appendiceal involvement is rare, with reported frequencies ranging from 0.5% to 5% of femoral hernias [3].

The diagnosis is usually difficult before surgery. Most patients present with a painful groin mass and nonspecific clinical or laboratory findings, so the condition may be indistinguishable from an incarcerated femoral hernia. In this setting, imaging can be useful. Ultrasonography may suggest incarcerated hernia contents, whereas computed tomography can identify the appendix within the femoral canal and help guide the operative approach [4-7].

There is no single accepted surgical strategy for this condition. Management depends on the patient's condition, the macroscopic appearance of the appendix, the presence of appendicitis or perforation, and the degree of contamination. These findings also influence the decision to perform appendectomy and whether prosthetic material can be safely used for hernia repair [5, 7, 8].

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We present the case of an 87-year-old woman with an incarcerated femoral hernia in whom preoperative imaging suggested de Garengeot hernia, later confirmed during emergency surgery. The appendix showed ischemic-appearing changes, and hemorrhagic fluid was found within the hernia sac; however, histopathology showed recent transmural hemorrhage without acute appendicitis. This case report was prepared in accordance with the CARE guidelines and SCARE 2025 criteria [9, 10].

Case presentation

An 87-year-old woman with no significant medical history was evaluated in the emergency department for a painful right inguinofemoral mass that had been present for approximately one month, with worsening pain during the preceding two days. She had taken analgesics without improvement. On admission, localized inflammatory changes were present over the right groin, without clinical or laboratory evidence of a systemic inflammatory response.

Soft-tissue ultrasonography showed increased echogenicity of the skin and subcutaneous tissue and a 36 × 30 mm ovoid lesion with fluid content and a hyperechoic tubular structure within it, suggesting incarcerated hernia contents. Contrast-enhanced abdominopelvic computed tomography showed a right femoral hernia containing fat, free fluid, and the distal portion of the vermiform appendix, consistent with de Garengeot hernia (Figure 1).

Emergency surgery was performed through an anterior open approach. An incarcerated right femoral hernia was identified, and after opening the hernia sac, hemorrhagic fluid and the vermiform appendix were found. The distal third of the appendix showed vascular congestion and ischemic-appearing changes (Figure 2).

Appendectomy was performed, followed by femoral herniorrhaphy using the McVay technique without mesh because of the potentially contaminated operative field. The procedure was completed without complications, and the patient was discharged

Figure 1. Contrast-enhanced abdominopelvic computed tomography findings.

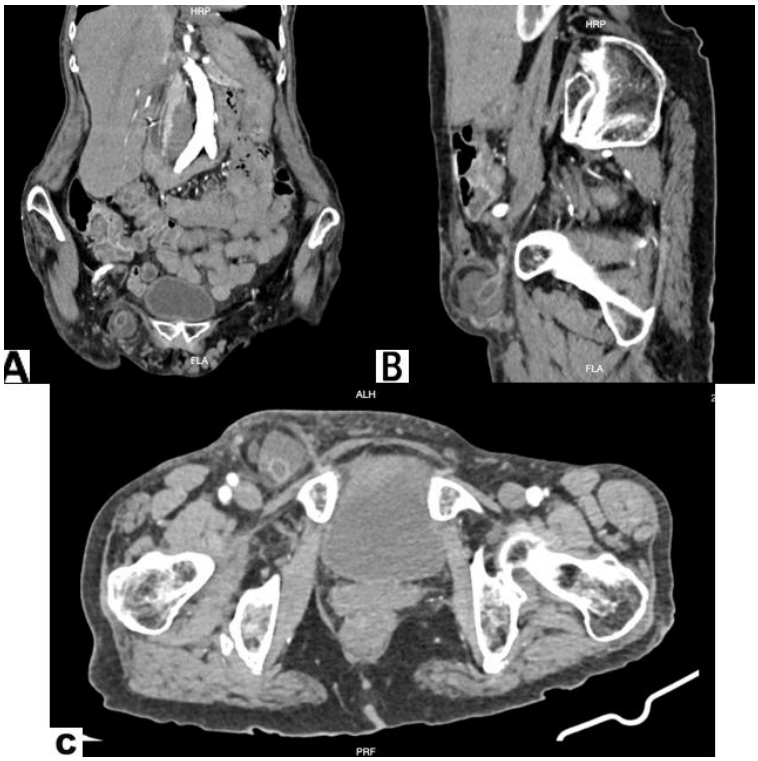

Image A: Coronal view showing a right femoral hernia containing the distal appendix, with wall enhancement, periappendiceal inflammatory changes, and free fluid within the hernia sac. **Image B:** Sagittal view demonstrating the appendix within the right femoral canal, consistent with de Garengeot hernia. **Image C:** Axial view showing the appendix in the right femoral region.

Figure 2. Clinical and intraoperative findings.

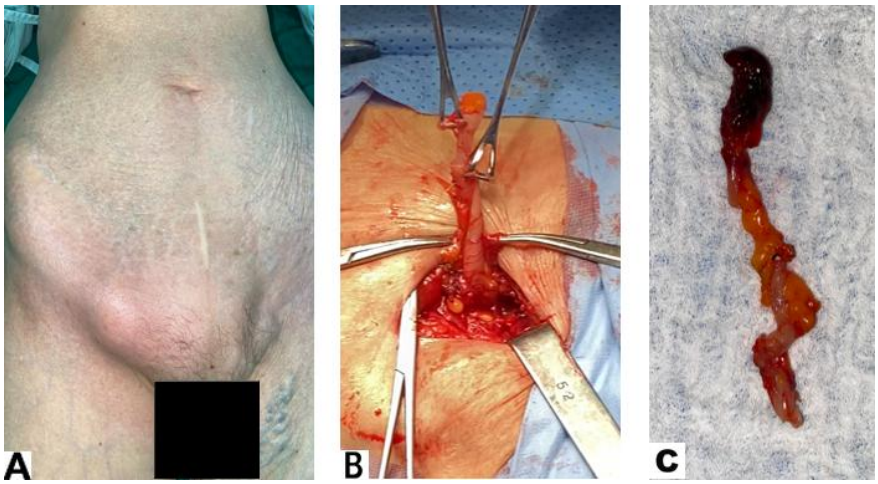

Image A: Preoperative photograph showing a bulge in the right inguinofemoral region below the inguinal ligament, consistent with an incarcerated femoral hernia. **Image B:** Intraoperative view showing protrusion of the vermiform appendix through the femoral ring. **Image C:** Resected vermiform appendix showing vascular congestion and ischemic-appearing changes after removal from the incarcerated femoral hernia sac.

24 hours after surgery. At one-month postoperative follow-up, the patient remained clinically well, with an appropriately healed surgical wound and no signs of infection, recurrent inguinofemoral mass, local pain, or clinical evidence of hernia recurrence. Histopathology showed recent transmural hemorrhage without acute appendicitis.

Discussion

The clinical diagnosis of de Garengeot hernia is difficult because its presentation overlaps with that of other complicated groin hernias. Patients usually present with painful inguinofemoral swelling, whereas laboratory findings may be normal or nonspecific. For this reason, many cases are still diagnosed during surgery rather than before the operation [3, 5].

In the present case, imaging was useful for surgical planning. Ultrasonography suggested incarcerated hernia contents, and contrast-enhanced computed tomography identified the appendix within the right femoral canal. Although the diagnosis may be made intraoperatively, computed tomography can provide relevant information about the hernia contents, appendiceal involvement, and possible inflammatory or ischemic changes [4, 7].

There is no standardized operative approach for de Garengeot hernia. The choice of technique depends on the patient's condition, the viability of the appendix, the presence of appendicitis or perforation, and the degree of contamination. Open anterior, open abdominal, laparoscopic, and combined approaches have been described; treatment should therefore be adapted to each case [5, 7, 8].

In this patient, an anterior open approach was chosen because the findings were localized to the groin and emergency repair of the incarcerated femoral hernia was required. Appendectomy was performed because the distal appendix showed vascular congestion and ischemic-appearing changes, and hemorrhagic fluid was present within the hernia sac. However, histopathology showed recent transmural hemorrhage without acute appendicitis. This discrepancy suggests that incarceration within the narrow femoral canal may produce venous congestion and hemorrhagic compromise without established inflammatory appendicitis.

The femoral defect was repaired using the McVay technique, a tissue-based repair that allows closure of the femoral defect through fixation to Cooper's ligament. This repair was preferred over other non-mesh tissue repairs because it provides direct reinforcement of the femoral canal through Cooper's ligament fixation, which was suitable for the localized femoral defect identified in this patient. Mesh was avoided because the operative field was considered potentially contaminated because of appendiceal involvement and the presence of hemorrhagic fluid. Although mesh use may be considered in selected cases without appendicitis or contamination, tissue repair remains a reasonable option when contamination is suspected [5, 7, 8].

This case provides two practical considerations. First, de Garengeot hernia should be considered in elderly women with painful inguinofemoral swelling, particularly when imaging suggests an incarcerated femoral hernia. Second, surgical management should not be based only on the presence of the appendix within the hernia sac but also on macroscopic findings, contamination risk, and histopathological correlation.

In conclusion, de Garengeot hernia is an uncommon condition that may be difficult to diagnose before surgery because of its nonspecific presentation. In this case, ultrasonography raised the initial suspicion, and computed tomography confirmed the presence of the appendix within the femoral canal, allowing appropriate operative planning. Appendectomy and tissue-based femoral hernia repair were performed without mesh because of macroscopic appendiceal compromise and concern for possible contamination. Histopathology showed recent transmural hemorrhage without acute appendicitis, supporting incarceration-related vascular compromise. Surgical management should be individualized according to clinical, radiological, and intraoperative findings.

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